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European GNSS Agency

31st meeting of the Administrative Board

Work Program 2012

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European GNSS Agency

31st meeting of the Administrative Board

Brussels, 15 November 2011

Work Programme for 2012¹

¹ Adopted by the Administrative Board on 15 November 2011 (subject to positive opinion from the European Commission)

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DEFINITIONS

(GNSS) APPAP	Application Action Plan
CDA	Crypto Distribution Authority
CDR	Critical Design Review
Commission	European Commission
CONOPS	Concept of Operations
DCN	Document Change Notice
DMS	Document Management System
DOORS	Dynamical Object-Oriented Requirements Systems
EC	European Commission
EDAS	EGNOS Data Access System
EGNOS	European Geostationary Navigation Overlay Service
ESA	European Space Agency
EUROCONTROL	European Organisation for the Safety of Air Navigation
FKC	Flight Key Cell
FOC	Full Operational Capability
FP7	Seventh Framework Programme for Research and Development of the European Union
GCC	Galileo Control Centre
GCS	Ground Control Segment
GKMF	GNSS Knowledge Management Facility
GMS	Ground Mission Segment
GNSS	Global Navigation Satellite System
GNSS Agency Regulation	Regulation (EU) No 912/2010 of the European Parliament and of the Council of 22 September 2010 setting up the European GNSS Agency, repealing Council Regulation (EC) No 1321/2004 on the establishment of structures for the management of the European satellite radio-navigation programmes and amending Regulation (EC) No. 683/2008 of the European Parliament and of the Council
GNSS Regulation	Regulation (EC) No. 683/2008 of the European Parliament and of the Council of 9 July 2008 on the further implementation of the European satellite navigation programmes (EGNOS and Galileo)
GSA	European GNSS Agency
GSA Regulation	Council Regulation (EC) No. 1321/2004 of 12 July 2004 on the establishment of structures for the management of the European satellite radio-navigation programmes, as amended by Council Regulation (EC) No. 1942/2006 of 12 December 2006
GSAC	Galileo Security Accreditation Committee
GSAP	Galileo Security Accreditation Panel
GSB	Galileo Security Board

GSC	GNSS Security Centre
GSF PDR	Galileo Security Facility Preliminary Design Review
GSMC	Galileo Security Monitoring Centre (part of the GSC dedicated to Galileo)
KPI	Key Performance Indicators
IATO	Initial Approval To Operate
IOC	Initial Operational Capability
IOV	In-Orbit Validation
Joint Action	Council Joint Action 2004/552/CFSP of 12 July 2004 on aspects of the operation of the European satellite radio-navigation system affecting the security of the European Union
LBS	Locations Based Service
OS - SIS ICD	Open Signal - Signal In Space Interface Control Document
POCP	Point Of Contact Platform
PRS	Public Regulated Service
SAB	Security Accreditation Board
Security Working Arrangement	Means the working arrangement on the execution of security related tasks of the European GNSS Programmes between the European Commission and the European GNSS Agency confirmed by GSA on February 21, 2011
SAR	Search and Rescue
SESAR	Single European Sky ATM Research
SME	Small and Medium-sized Enterprise
SOP	Standard Operating Procedures
SSRS	System specific Security Requirements Statements

1 INTRODUCTION

The GSA Regulation (Council Regulation (EC) No 1321/2004) established the GSA, whose role has evolved over the last years.

The termination of the Galileo concession on 20 June 2007 and the entry into force of the GNSS Regulation (Regulation (EC) No. 683/2008) on 25 July 2008 have led to a redefinition of the GSA's tasks. The GNSS Regulation restructures the governance of the European GNSS programmes, which is based on a clear division of tasks between the Commission, the GSA and the ESA. It confers on the Commission the responsibility for the management of the European GNSS programmes and establishes that ESA shall act as procurement agent². As regards the GSA, the GNSS Regulation confers on it the tasks of security accreditation, operation of the Galileo Security Centre, contribution to the preparation of the commercialisation of the systems, including the necessary market analysis, and other tasks that may be entrusted to it by the Commission. By virtue of the GNSS Agency Regulation (Regulation (EU) No. 912/2010) adopted on 22 September 2010, which entered into force on 9 November 2010, the European GNSS Supervisory Authority (GSA) became the European GNSS Agency (GSA).

The GNSS Agency Regulation restructures the organisation of the GSA by introducing the Security Accreditation Board as a new body, replacing the GSA Administrative Board in this prior function, and removing the System Safety and Security Committee of the European GNSS Supervisory Authority. The GNSS Agency Regulation also establishes the tasks of the European GNSS Agency with reference to Article 16 of the GNSS Regulation resulting in a substantial concentration of tasks in comparison to Article 2 of former GSA Regulation.

2 LEGAL REFERENCE FOR THE WORK PROGRAMME 2012

According to Article 6(b) Regulation (EU) No. 912/2010, the Administrative Board shall adopt the Work Programme 2012 of the Agency by 15 November 2011, after receiving the opinion of the Commission.

The Work Programme 2012 reflects the tasks that are entrusted to the GSA in light of the GNSS Agency Regulation. Furthermore, it takes into account (1) the European GNSS Strategic Framework³ and (2) the guidelines issued by the Commission in accordance with Article 16 GNSS Regulation⁴, including the Working Arrangement for the execution of security related tasks of the European GNSS programmes between the European Commission and the European GNSS Agency⁵. The guidelines are attached to the present document as **Annex 1**.

3 MISSION AND TASKS OF THE GSA

The overall mission of the GSA is laid down in the GNSS Regulation. Article 2 GNSS Agency Regulation, which defines the tasks conferred to the GSA, refers to Article 16 GNSS Regulation which reads:

² ESA shall also act as design authority for the European GNSS programmes. See Commission Decision C(2008)8371 of 12 December 2008 adopting the 2008 Work Programme of the European satellite radio-navigation programmes (EGNOS and Galileo) and Commission Decision C(2008)8378 of 12 December 2008 adopting the Strategic Framework of the GNSS Programmes.

³ Approved by the European GNSS Programmes Committee in September 2008.

⁴ "Commission guidelines to the European GNSS Supervisory Authority," C(2009)1153 final, 25 February 2009.

⁵ Agreement in the form of Exchange of Letters on a Working Arrangement for the execution of security related tasks of the European GNSS programmes between the European Commission and the European GNSS Agency, Ref. ENTR/GP2 AN/am Ares (2010)1087450 dated 28 January 2011.

"Subject to the provisions of Article 12 [GNSS Regulation] and the respect of the Commission's role as manager of the programmes, the [GSA] shall accomplish the following tasks within the programmes in accordance with guidelines to be issued by the Commission:

- (1) with regard to the security of the programmes, and without prejudice to Articles 13 and 14 [GNSS Regulation], it shall ensure:
 - (a) security accreditation⁶; to that effect it shall initiate and monitor the implementation of security procedures and perform system security audits;
 - (b) the operation of the Galileo security centre, implemented in accordance with decisions taken pursuant to Article 13 [GNSS Regulation] and the instructions provided under Joint Action 2004/552/CFSP;
- (2) it shall contribute to the preparation of the commercialisation of the systems, including the necessary market analysis;
- (3) it shall also accomplish other tasks that may be entrusted to it by the Commission, in accordance with Article 54(2)(b) of the Financial Regulation, addressing specific issues linked to the programmes, such as:
 - (a) promoting applications and services in the satellite navigation market;
 - (b) ensuring that the components of the systems are certified by the appropriate, duly authorised, certification bodies."

A number of other tasks are included in this Work Programme for 2012, such as the exploitation tasks for EGNOS and Galileo. These tasks will be delegated to the Agency through specific delegation agreements from the Commission. The tasks, when mentioned later in the document, are marked as 'Delegated Tasks'.

Other potential areas for delegations are given in recital n°8 of the GNSS Agency Regulation. Such activities could, for example, include: following the development of coordination and consultation procedures on security related matters, carrying out research of benefit to the development and promotion of the programmes and providing support in the development and implementation of the Public Regulated Service (PRS) pilot project.

4 LONG-TERM VISION AND STRATEGIC OBJECTIVES

The vision and strategy that constitute the background of the Provisional Work Programme 2012 are based on the Commission's European GNSS Strategic Framework, the GSA's experience of the programmes and knowledge of the forward-looking positions of the Council, European Parliament and Commission.

Vision

- GNSSs enable a set of applications that profoundly improve mobility and security of goods across all transportation modes, enhance personal mobility and productivity.
- GNSS is more and more configuring itself as a multi-constellation system of which Galileo will be a key constituting element.

⁶ Article 3 of GNSS Agency Regulation creates the Security Accreditation Board as a body of the Agency.

- Galileo will realise the European objective of autonomy in such a strategic and crucial technology as GNSS. Within European Member States, the effective implementation of government policy and regulations and widespread reliance on satellite navigation services cannot be ensured if users are completely dependent on a single system outside of any European control.
- As the universal system driven by Europe, Galileo aims at adding value to users vs. current systems on the market, enabling together with EGNOS important public benefits (EUR billion 40-60 cumulative 2010-2027), contributing to the EU return on investment, and ensuring the European industry and European users obtain maximum benefit from these new applications.
- Users and stakeholders for localisation, navigation and timing applications are increasingly aware of the strategic importance of Global Navigation Satellite Systems. The services provided by these new systems are already deeply integrated into many of the critical infrastructures which provide the foundations to our modern societies, such as transport of people, goods and energy, telecommunications, trade and banking. The Galileo system is built specifically to meet these needs and corresponding markets as closely as possible, providing appropriate service guarantees and performance.
- The GSA will help the EU reap the benefits of EGNOS and Galileo by preparing, promoting the services, launching initiatives to develop new applications and enter the market; in particular, EGNOS encouraging 2009-2011 market entry will demonstrate EU ability to market a new satellite navigation infrastructure.
- Building EGNOS and Galileo market penetration requires constant update of market knowledge on users and key players in the value chain, which is only achievable via concrete ongoing interaction in the market place. The GSA will contribute to building and updating market knowledge for the European GNSS programmes.
- The public sector across the EU is key in fostering European GNSS adoption since in most market segments it acts as a customer or as a key stakeholder. A targeted action plan will have a multiplier effect on market penetration of EGNOS and Galileo.
- EU Member States and institutions will have to satisfy security injunctions induced by this strategic dimension of the Galileo system, which is therefore considered to be a straw model for developing a EU Internal and Space Security Policy.
- The GSA is a key stakeholder for the overall security of the systems by accrediting of the different elements thereof and operating the GSMC.
- PRS is about security for supporting governmental applications, and security is a general trend nowadays, beyond military needs. This opens a unique opportunity to PRS end-users in the civil sectors, including domestic security and police forces, transport operators, critical infrastructures and many others.
- Moreover, control of access to, including denial of, these powerful systems (which could be used for hostile actions worldwide at any time) has to be ensured in the context of homeland security against the rising terrorism threat. The PRS has been developed to support EU Member States and institutions address their public responsibility for the strategic concerns regarding these security imperatives.

- The GSA will be the PRS Service Provider, promoting the service and ensuring its utilisation in accordance with the access policy established by the Council and the European Parliament⁷.
- The GSA will contribute to develop the PRS user segment with the objective to maximise PRS adoption.

Strategic objectives

The Provisional Work Programme 2012 has been designed to reflect the activities that need to be carried out in 2012 towards the achievement of the following main strategic objectives:⁸

- ensure that all prerequisites for secure systems operation are in place in time to protect the Galileo assets and to guarantee the confidentiality⁹, integrity and availability of the services provided;
- ensure, through an accreditation process, that the risks affecting the security of the Galileo system are appropriately mitigated and the residual vulnerabilities reduced;
- in coordination with the EC, ensure that all prerequisites for efficient operation and extensive utilisation of the systems are in place in time for the exploitation phase;
- ensure a thorough knowledge and understanding of the GNSS market, i.e. the users and actors of the value chain; this will enable to steer service definition, to stimulate successful market uptake and to support the European GNSS programme with authoritative information;
- facilitate and in some cases drive the development of innovative and critical applications to stimulate the GNSS market; foster GNSS related business creation by encouraging business planning within R&D projects and by engaging SMEs; and
- promote the services of the European GNSS systems, with the focus on EGNOS as the forerunner of Galileo, also monitoring satisfaction of identified customer needs, aiming at steering service levels accordingly.

5 MAIN ASSUMPTIONS OF THE WORK PROGRAMME 2012

The Work Programme 2012 is drafted based on the following assumptions¹⁰:

Galileo:

- IOV will continue until end 2012/early 2013.
- The remaining major procurement contracts for WP2 (GMS) and WP3 (GCS) have been concluded in 2011 and are due to complete IOC by 2015.

⁷ "Proposal for a Decision of the European Parliament and of the Council on the detailed rules for access to the public regulated service offered by the global navigation satellite system established under the Galileo programme", Brussels, 8.10.2010, COM(2010) 550 final.

⁸ The strategic objectives are mid/long-term objectives aiming at the full operational capability and exploitation of the European GNSS.

⁹ "Confidentiality" in the present context means the need to protect against unwarranted disclosure of information associated to the service.

¹⁰ These assumptions reflect the current understanding of the GSA.

- An Initial Operations Capability (IOC) with initial implementation of the Open Service, PRS and SAR will be achieved in 2015 within the existing budget provisions. The achievement of FOC will depend on the remaining major procurement contracts, especially WP2 (GMS), and the availability of additional funding (see "exploitation" below).
- The Galileo Programme work necessary for the IOV Start Endorsement and System Initial Approval To Operate (IATO) will be completed in time for the IOV Start Endorsement milestone (mid 2012) and System Initial Approval To Operate milestone (end 2012).
- Multiannual Financial Framework
 - Concerning the next Multiannual Financial Framework (MFF 2014 – 2020), the EC has made a proposal for the EU GNSS budget (7 billion €), which is under the approval process by the Council and the Parliament. It is now key to start preparing the exploitation phase and in this respect the EC (DG-ENTR) is going to delegate the preparatory tasks to the GSA.
- Regarding the GSMC:
 - To prepare everything that is needed, from now until IOC and for the GSA to undertake its operator role for the GSMC operations operator, in addition to the existing Security Working Agreement.
 - The Critical Design Review (CDR) milestone will have been completed in June 2012 having taken good notice and having integrated for matters relating to the GSMC:
 - The PRS concept of operations (PRS CONOPS) (including a detailed vision of the roles and functions that the GSMC Local POC equipment that should enable an efficient and effective service by the GSMC as well as enable a easy operational management of the PRS receivers lifecycle in order to facilitate the success of PRS) which is to be validated by EC before March 2012. Should this assumption not be fulfilled, GSA would hope that the EC/ESA would be willing to consider an update of the PRS related requirements at a later stage and thus have a subsequent iteration of the design, while nevertheless staying with the 2015 service launch objectives.
 - The GSMC draft Concept of Operations and GSMC Mission Requirements Definition, which have been reflected into the SSRS 3.9 and SFREQ (of WP2).
 - Staff for GSMC will not be transferred to Prague and will stay in Brussels until their expected relocation in 2013/2014 to the GSMC sites in FR and UK. They could also be recruited to work directly in such locations for tasks requiring frequent local presence. Relocations are to be confirmed based on confirmed site/equipment deliveries at the latest in December of a year for relocation in July or August of the following year.

- The EC will remain prime responsible for the key Galileo Programme milestones to which the GSMC work programme will have to be adapted for if the dates of the milestones achievement changes¹¹.
- The field trials of the PRS Pilot will start in 2012.

EGNOS:

- The certification process of ESSP for civil aviation to achieve a Safety of Life service declaration was concluded in 2011 (i.e. system and service provider certification).
- The EC and the ESSP share the task of implementing the EDAS enhancements, building onto the beta test results. Expected date for go-live is mid 2012.
- Work on EGNOS market development activities will continue throughout 2012, in functions of budget constraints.

FP7:

- The FP7 3rd call, which was published on 20 July 2010 with a budget of €38 million (covering also calls for tenders and evaluation costs), was evaluated and projects selected at the beginning of 2011. While most projects will be launched before the end of 2011, they will deploy substantial activities in 2012.

PRS Pilot Project:

- The Commission has delegated to the GNSS Agency the operational aspects of a PRS Pilot Project. The first implementation activities of the PRS Pilot Project have been launched in 2010 through the P3RS projects and initial proposals for improving the use of the PRS service will be prepared on the basis of the first results. The cooperation on the PRS projects is ruled by the working arrangement between the European Commission and the European GNSS Agency. The Agency already provides support on the P3RS projects I and II launched in 2010. In April 2011, it received a related delegation of 11M€ budget for the following P3RS projects II to be launched in 2011 onwards. In addition, this delegation should include a dedicated budget of 600 K€ for supporting the initial outsourcing of GSMC OPS engineering in 2011.

Galileo and EGNOS exploitation preparatory tasks¹²

- Promotional activities for Galileo started in 2011. Given limited resources a priority is given firstly to PRS and secondly to Trusted Positioning. In 2012, activities regarding Open Signal should start and consequent resources made available.
- Subject to the finalisation of a delegation agreement by EC, the Agency will launch some key preparatory activities targeting Galileo and EGNOS long term exploitation phase, which are expected to start on 2015 and 2014 respectively.

EC Application Action Plan implementation tasks¹³

¹¹ Delays in the milestones dates shall be accommodated without agreement of the GSA but could entail a less efficient/more costly overall process. Milestones set earlier than originally planned would need GSA endorsement after checking for feasibility.

¹² These are delegated tasks under the Delegation Agreement on additional tasks to be finalised between the GSA and the Commission.

¹³ ibid

- Subject to the finalisation of a delegation agreement by EC, the Agency will support the Commission in actions that aim at the further implementation of specific tasks linked to the EC Application Action Plan (APPAP).

6 PRIORITIES IN 2012

Galileo/EGNOS Exploitation

Subject to a delegation agreement from the EC:

- To define the Galileo/EGNOS program governance structure in terms of “make or buy” alternatives.

Security

Security accreditation

- Perform system design, qualification and operational review and system audits to verify that the Galileo System-specific Security Requirements (SSRS) are met.
- Support audits and on-site inspections to ensure that the sites hosting Galileo stations are meeting national security rules and regulations, as well as the Galileo Programme Security Instructions (PSI).
- Review the security requirements (security targets) of system components implementing security functions and to follow the component evaluation and certification process.
- Define and implement the Galileo PRS receiver certification, evaluation and accreditation process, as well as for the Galileo PRS manufacturers accreditation process.
- Manage and support the SAB, GSAP and CDA.
- Organise and coordinate FKC activities for launch campaigns.

GSMC: The GSA will perform its operational role with the GSMC Nucleus activity, and gradually support the preparation of everything that is needed, from now until IOC to undertake its operator role for the GSMC operations operator.

- **GSMC Nucleus:** Continue the operation with year round 24/7 on call roster, and after performing a review of performance and relevance by the end of the first quarter adapt the missions and operating procedures according to stakeholder inputs and with GSAP approval
- **GSMC Program Management:** Initiate and lead the coordination of the entire GSMC delivery.
- **GSMC Operations:** Develop a first concept of operations and drafts of operational procedures for GSMC personnel and align those with corresponding developments needed from the Galileo system operator of Work Package 6¹⁴ (under leadership and control of ESA).

¹⁴ Space Opal

- **GSMC Technical Management:** Ensure that the infrastructure and equipment that shall be provided (from 2013 onwards) shall meet the GSMC operational needs:
 - **Infrastructure:** Negotiate an initial hosting support agreement with the FR and UK governments and contribute to reviews of the GSMC hosting infrastructure development progress with the technical support of ESA to qualify the equipment.
 - **Operational Equipment:** Contribute to the design of the GSMC operational equipment & software, and follow-up closely the detailed development thereof in close collaboration with Work Package 2 contractor¹⁵(under leadership and control of ESA).
 - Procure and configure GSMC administration equipment for deployment in 2013 once GSMC site have passed initial site accreditation.
- **Build GSMC Organisation:** Develop designs and establish plans, and progress in setting up other areas of competency and roles required to fulfil the IOC missions of the GSMC: (1) the Crypto Distribution Authority, (2) the PRS Service Provision by the GSMC (3) the Local Security Officer functions, (4) quality assurance, (5) technology and security watch and (6) the administrative management (finance, human resources management, reporting functions).
- Recruit and train GSMC staff as well as award a support framework contract to cover work force or expertise and possibly equipment and selected services required until 2016 and not achieved by recruiting.

Support to PRS service¹⁶

- Ensure the implementation of the PRS Pilot Project, for validating PRS operational and user functions and accelerating preparatory activities in Member States. This activity includes testing that PRS specific Infrastructure (GSMC, POCP, National organisations) will be ready to support the PRS service and the development of the first "standard" type of operational PRS receiver at EU level.
- Contribute to the development of technologies, architectures, standards for the PRS User segment, based on the preliminary definition of a global PRS User Segment Technological Roadmap and including development of PRS Security Module technology and chips (mainly through FP7-FP8 and PRS Pilot Project).
- Support the Commission towards the development of low cost and "unclassified when keyed" PRS receivers (mainly through FP7-FP8 and PRS Pilot Project).
- Support the Market development Department work on the PRS user Segment, by providing expertise and support on market researches in various application areas (for example homeland security, emergency services, critical infrastructure and defence).
- Provide expertise and support to the GNSS Security Board Working Group PRS (WG-PRS), especially regarding the definition of Common Minimum Standards and Guidelines for the management of PRS in EU Member States and the definition of the PRS implementation plan.

¹⁵ Logica

¹⁶ Support to the Commission within a working arrangement and a delegation on security related tasks [ref].

- Support the European Commission and the related Market Development activities in the PRS awareness process towards Member States, industry, European organisations and user communities, organising workshops, information days, dissemination of study results etc.

Market Development

Contribution to the preparation of the commercialisation of the systems

- Market Development of EGNOS in four priority segments: aviation, road, agriculture and mapping, the last belonging to the high precision domain. FP7 projects will continue to be a key lever for EGNOS market development and adoption, demonstrating value added to users and value chain.
- Market monitoring, also extended to PRS, monitoring market information and European GNSS public benefits.
- Support to the EC, if necessary, for dedicated market development activities, including EDAS enhanced service once launched.

R&D

Under the current Delegation Agreement by EC, the Agency will carry out the following tasks:¹⁷

- Management of the portfolio of projects from the 1st, 2nd and 3rd FP7 calls including the dissemination of the results and reporting to the EC, with the specific objective of achieving prototypes and products which can later lead to new business creation.
- Dissemination of results via dedicated FP7 brochure and other means.

Exploitation preparatory Tasks¹⁸

Subject to the finalisation of the Delegation Agreement with the EC, the Agency will also undertake to carry out the following tasks:

- Galileo OS exploitation preparation, including "help desk" support and management of the ICD licensing process.
- Further developments of the Galileo Commercial Service definition and exploitation preparation.
- Galileo PRS exploitation preparation, which will concentrate on the definition of the PRS user requirements.
- Update and promote EGNOS portal in order to attract application developers and key actors along the value chain.
- Support the EC in SME programme in the SME programme aiming at fostering market uptake within the European GNSS programmes.

EC Application Action Plan Implementation Tasks¹⁹

¹⁷ These are delegated tasks under Delegation Agreements (DA) on FP7

¹⁸ These are delegated tasks under the Delegation Agreement on additional tasks to be finalised between the GSA and the Commission.

Subject to the finalisation of the Delegation Agreement by EC, the Agency will also undertake to carry out the following tasks:

- Development and implementation of a tracking system of APPAP results and KPIs.
- Assessment and reporting on research and application development including KPIs, evaluation of economic and social impact
- Galileo and EGNOS receiver technology monitoring.
- Analysis of EU share of the GNSS application market.
- Specific support for Maritime APPAP related activities.

7 OUTLINE OF THE WORK PROGRAMME 2012

The following section describes the activities the GSA expects to perform in 2012 under the supervision of the Administrative Board and in accordance with the Commission guidelines as complemented by the working arrangement between the GSA and the Commission.

The Provisional Work Programme 2012 is based on the resources that the GSA expects to have in 2012, as presented in the draft Budget²⁰ and Establishment Plan 2012 submitted to the Administrative Board together with this Provisional Work Programme. If the expected resources fail to materialise and/or the specific guidelines issued by the Commission entail significant increases of effort, the extent and priorities of the Provisional Work Programme 2012 will have to be adjusted accordingly. Concerning the security area, the security priorities n° 1 (security accreditation) and n° 2 (GSMC) shall be achieved in the first place.

As stated in chapter 3 of this document, Article 16 of the GNSS Regulation is divided into three tasks: (1) security of the programmes; (2) preparation of the commercialisation of the systems; (3) other tasks entrusted by EC.

This Work Programme is divided in five areas of activity that can be allocated to one of the three tasks.

The first two areas of activity, i.e. Security and Market Development, refer to the tasks (1) and (2) of the above quoted Article 16.

The third area of Research and Development is delegated by the EC to the GSA under Article 54(b) of the Financial Regulation (see chapter 7.3.1).

The fourth area of activity i.e. Exploitation preparatory Tasks and the fifth one i.e. the EC Application Action Plan Implementation Tasks are part of task (3) of Article 16 and still require a delegation for 2012.

¹⁹ These are delegated tasks under the Delegation Agreement on additional tasks to be finalised between the GSA and the Commission.

7.1 Security

In 2012, priorities on security activities for the GSA will be in the following order: i) security accreditation; ii) preparation of the GSMC and a critical design review.

In addition, some activities will be pursued in support of the Commission, following the working arrangement concluded with the Commission and the delegation agreement concluded in 2011 for the implementation of the PRS Pilot Project. The Security Working Arrangement outlines the cooperation framework between the European Commission and the GSA and further defines the Guidelines addressed to the Agency for the implementation of the EGNSS programmes security related tasks. The cooperation framework concerns the following areas:

- Security Accreditation of the systems
- Operation of the Galileo Security Monitoring Centre²¹
- GNSS Security Board and associated Working Groups
- PRS Pilot Project
- PRS User Segment
- European GNSS Technology Control Regime

7.1.1 Galileo security accreditation

The Security Accreditation Board for European GNSS systems ("Security Accreditation Board" or "SAB") was established within the GSA through the GNSS Agency Regulation in 2010. In relation to the European GNSS systems, the Security Accreditation Board has the tasks of the Security Accreditation Authority (SAA). The SAB performs the tasks entrusted to the GSA with regard to security accreditation under Article 16(a)(i) of the GNSS Regulation and takes "security accreditation decisions". Such decisions shall include:

- the approval of the security accreditation strategy and of satellite launches,
- the authorisation to operate the systems in their different configurations and for the various services,
- the authorisation to operate the ground stations and in particular the sensor stations located in third countries,
- as well as the authorisation to manufacture receivers containing PRS technology and their components.

The Security Accreditation Board has set up special subordinate bodies, acting on its instructions, to deal with specific issues. In particular, it set up:

- a panel (GSAP) to conduct security analysis reviews and tests to produce the relevant risk reports in order to assist it in preparing its decisions;

²¹ As indicated in the assumptions, assuming an extension of the Security Working Agreement relative to the GSMC.

- a Crypto Distribution Authority (CDA) to assist the Security Accreditation Board in particular with regard to questions related to flight keys.

In 2012, the accreditation activities of the GSA will focus on the support required by the SAB from the GSA staff, for the preparation of the above mentioned accreditation decisions and in particular on system and sites security accreditation, component security evaluation and certification and on PRS user segment security accreditation.

Main tasks in 2012

- System level: performance of system design, qualification and operational review and system audits to verify that the Galileo System-specific Security Requirements (SSRS) are met.
- Local sites level: support to audits and on-site inspections to ensure that the sites hosting Galileo stations are meeting national security rules and regulations, as well as the Galileo Programme Security Instructions (PSI).
- Security components level: review of the security requirements (security targets) of system components implementing security functions and follow-up of the component evaluation and certification process.
- PRS User Segment level: definition and implementation of the Galileo PRS receiver certification, evaluation and accreditation process, as well as the Galileo PRS manufacturers accreditation process.
- GSAP management tasks: including chairmanship, technical secretariat and organizational secretariat.
- CDA management: including chairmanship, technical secretariat, organizational secretariat and organisation of FKC activities for each launch campaign.
- SAB management tasks: including organizational secretariat, coordination and preparation of relevant files for accreditation decisions.
- Conclusion of an agreement with ESA on the exchange of classified information

7.1.1.1 System Level Accreditation Tasks

The Galileo Accreditation process is strongly linked to the Galileo design, development and deployment process. For each specific Galileo technical milestone, the GSA Accreditation team is required to examine the security features of the system (according to the predefined scopes of each milestone) in order to verify if the system is sufficiently secure to allow protectively marked data to be processed by it. This, in practice, means that a decision must be taken to determine if the system is sufficiently secure for Galileo operations. In order to achieve this objective, the GSA is required to:

- perform periodic reviews of the system-level documentation;
- perform independent security vulnerability analysis and security tests on the system;
- manage the residual security risks of the system through a suitable security risk management process.

7.1.1.2 Local Sites Accreditation Tasks

Each Galileo site is subject to a specific security accreditation process. The LSAA (Local Security Accreditation Authority) is the centre of the Local Security Accreditation Process as it will perform the liaison at security level between GSA/ESA and the Hosting Entity.

For the case of European Sites, the LSAA will be the relevant National Security Authority (NSA), or any other representative authority officially appointed by the NSA, for the country where the Site is located. In the case of non-European Sites, the LSAA performing the Site Accreditation Inspections will be the GSA.

The local site security accreditation process requires two different types of activities in two different steps:

- the review of the local site security documentation;
- the inspection of the site.

The information gathered in each local site accreditation process is used to evaluate the security risks affecting the system and will feed the system-level residual security risk register.

7.1.1.3 Security Component Level Accreditation Tasks

Components implementing security functions in the Galileo system are subject to specific evaluation and certification processes (Crypto evaluation, TEMPEST evaluation, Common Criteria Evaluation and Certification). Although specific and accredited national centres perform this type of activities, the GSA has an important role as well.

The documentation defining the security requirement (Security Targets) for these components shall be reviewed and linked to the system-level security objectives.

Also, the evaluation and certification process shall be followed. Information shall be shared with the national centres performing the evaluation of the components in order to align the security objectives to the system security needs.

The information gathered in each component evaluation and certification process is used to evaluate the security risks affecting the system and will feed the system-level residual security risk register.

7.1.1.4 User Segment Accreditation Tasks

The accreditation tasks related to the User Segment should be defined in 2011-2012 timeframe, in particular on the basis of a PRS Access Policy to be set out by the Council, which is currently being discussed with the Council of the EU and with the European Parliament.

In 2012, several activities need to be performed in order to implement this new process, including:

- User Segment Accreditation process on the basis of the User Segment Accreditation Strategy;
- Receiver evaluation and certification process;
- Accreditation process for manufacturers producing receivers including PRS technology.

7.1.1.5 Management and Support of SAB, GSAP AND CDA

SAB

Interactions between the GSAP and the SAB are guaranteed by the GSAP chairman periodical reports.

When specific accreditation milestone decisions are at stake, specific accreditation reports are prepared by the GSAP and submitted to the SAB for their evaluation and endorsement. This process must be carefully followed and managed. Decisions taken by the SAB may be different from what the GSAP might have recommended in the first instance. This is because the GSAP participants will make recommendations on the basis of technical evidences related to the security risks affecting the system. Different considerations might be made at SAB level whereas other constraints might be taken into account (e.g. program budget and schedule) that might require different decisions to be taken.

This means that the GSA Team has to support not only the technical security accreditation tasks in the framework of the GSAP, but also provide the necessary support to bodies like the SAB in its role of SAA.

This, in turn, implies the need of a general planning and schedule of the entire accreditation process involving several entities. The GSAP shall adapt its work plan to the technical milestones organized by ESA. On the other hand the SAB shall be organized in a consistent way to attain the security accreditation decisions in line with the general program schedule.

GSAP

The main purpose of the GSAP is to provide technical advice to prepare accreditation decisions. This is done by implementing a suitable security risk management process, which will produce a global system-level security risk assessment to be submitted for decision to the SAB in its role of SAA.

The GNSS Security Accreditation Panel (GSAP) that shall be established by the SAB is proposed to be defined on the basis of the technical tasks outlined above. In order to guarantee continuity of work with the previous GSAP setup and the most suitable and efficient way of performing the accreditation tasks the GSAP could stay divided into the following specific formations:

- GSAP Formation 1 (GF1): involved in all system-level technical accreditation tasks
- GSAP Formation 2 (GF2): involved in all site-level technical accreditation tasks
- GSAP Formation 3 (GF3): involved in security component-level technical accreditation tasks as well as crypto matters

A new formation could be setup as well at a later stage in order to perform all the tasks required by the GNSS/GNSS Agency regulations:

- GSAP Formation 4 (GF4): involved in all User Segment-level accreditation tasks

This structure enables more flexibility and responsiveness to project needs, involving only the most competent people on each specific matter and ensuring at the same time the need-to-know principle. GSAP Formation 2 and 3 will provide inputs to Formation 1. The coordination among the different formations is guaranteed by the chairman and secretariat roles played by the GSA.

It is evident, however, that flexibility and high responsiveness requires an important effort in terms of management needed to organize the technical work (most of which is performed off-line), coordination with the GSAP Members (EC, ESA, GSC, MS), organization of the meetings and preparation of the relevant files.

CDA

The CDA, including the FKC, is coordinated by the GSA with the officials nominated by the SAB. The operational activities of the CDA are achieved and/or supported by the GSA with the support of National Distribution Agencies (NDA) of Member States for specific tasks that have to be achieved in their country (DE, FR, IT).

The CDA will establish in 2012 a COMSEC account (required for accountable material) and shall have appropriate areas for safeguarding crypto material (up to SECRET).

The Galileo Security Monitoring Centre (GSMC) shall support the CDA progressively from 2012. Since crypto material will be disseminated in different areas, it is conceivable – and possibly subject to separate agreements between the relevant parties – that CDA Members will be stationed near crypto material locations (i.e.: at the Galileo Control Centres).

7.1.1.6 CDA and FKC Operational Tasks

General tasks of the CDA will start to be implemented in 2012 and are the following:

- a) Coordination of the FKC Tasks,
- b) Accounting of crypto material with automated accounting tools,
- c) Secure handling of crypto material,
- d) Storage of crypto material,
- e) Verify the crypto period of keys,
- f) Backup of relevant keys (recovery Plan),
- g) Distribution of crypto material including RED/BLACK keys (i.e. keys transfer to Point of Contact Platform – POCP, initialisation of PRS SM, etc.),
- h) Trace shipment of crypto material (system, receivers, components),
- i) Audit local COMSEC accounts,
- j) Report suspected compromise of security to GSMC,
- k) Prepare the draft CDA Annual Management Plan including the FKC Annual Work Plan

Specific activities of the CDA for flight keys are managed by the FKC and can be separated in 3 major parts:

- The creation of the Seeds (initialisation parameters at NSAs) and provision to the system (at GCCs) ;
- The generation of the flight initialisation keys and security parameters (at GCCs) ;
- The loading of the flight initialisation keys and security parameters into the Spacecrafts (at Launch Site).

FKC tasks have started in 2011 for preparing the first launch and will be maintained in 2012 for the second launch; they include the following steps:

- a) Seeds loading - FKC-Step 1 [all FKC Members]
- b) Key generation in GCC - FKC-Step 2 [GSA+2 National Experts]
- c) Key loading in BBKME - FKC-Step 3 [GSA+2 National Experts]
- d) Transport to Launch site - FKC-Step 4 [GSA+1 National Expert]
- e) Fill device storage in Launch site - FKC-Step 5 [GSA+1 National Expert]

- f) Transport to integration Area - FKC-Step 6 [GSA+1 National Expert]
- g) Flight Keys loading in Spacecraft - FKC-Step 7 [GSA+2 National Experts]
- h) Flight Keys verification test from the GCC - FKC-Step 8 [GSA+1 National Expert]
- i) (Flight Keys loading failure - FKC-Step 9) if needed [GSA+2 National Experts]
- j) Seal verification - FKC-Step 10 [GSA+1 National Expert]
- k) (Debris recovery FKC - Step 10') if needed [all FKC Members]
- l) Return of Fill device to GCC - FKC-Step 11 [GSA+1 National Expert]

2012 will finally be the year for preparing the transfer of CDA and FKC operational activities in the GSMC, as required by the SSRS 3.9. Chapter 7.1.2.6 provides details of GSMC activities associated to this transfer.

7.1.1.7 EC-GSA Working Arrangement on Security Accreditation²²

In order to ensure the performance of these activities and optimize the interaction with the EC, the following tasks fall within the responsibilities of the Agency under this working arrangement:

1. Participation in accreditation reviews under the IOV and FOC contracts.
2. Participation in Security Accreditation Quarterly Meetings convened by the CPM involving the Agency, ESA and industry as relevant, as a means to prepare and coordinate for the security accreditation of the Galileo System and operations.
3. Consultation of the CPM, in the frame of the preparation of the Security Accreditation Board meetings, on the agenda and the roadmap of the SAB and list those decisions items that may have an impact on the program as early as possible, before the actual meetings with a view to facilitate the program impact assessment in time for the EC representative to be able to present such impact to the SAB;
4. Participation as observer to the Program Change Control Board, the Program Management Meetings and, depending on the agenda, to the Quarterly Project Meetings;

In addition to the above the Agency can provide technical assistance to the EC in order to:

5. Maintain the SSRS and other security requirements under a DOORS database for security accreditation purposes;
6. Support the EC in updating the Galileo SSRS and other security requirements, as required;
7. Support the EC in updating the GNSS (Galileo and EGNOS) security threats and vulnerabilities analysis and risk assessment;
8. Support the EC in establishing any relevant EGNOS security-related requirements;

²² As defined in the "Agreement in the form of Exchange of Letters on a Working Arrangement for the execution of security related tasks of the European GNSS programmes between the European Commission and the European GNSS Agency", Ref. ENTR/GP2 AN/am Ares (2010)1087450 dated 28 January 2011.

9. Update the security accreditation risk register, as required by events;
10. Update the plan of needed program decisions to facilitate security accreditation decision, as required by events;
11. Report to the CPM of the main issues/findings after each review.

7.1.2 GSMC

The GSMC has the mission to provide a secure EU facility that offers a secure method for PRS users to interact with the Galileo System Operator. This will simplify the operation of the Galileo system and provide assurance to PRS users that sensitive information relating to their use of Galileo is suitably managed and protected. The GSMC also coordinates the implementation of Joint Action instructions received from the EU SitCen (Situation Centre - European Council).

The GSMC security role is such that it will be staffed by GSA personnel, possibly supported by security experts seconded from Member States.

The GSMC is required to deliver the following specific missions:

- Management of PRS access (including receiver and PRS order management);
- Command and control of operating modes affecting the security of Galileo services;
- Galileo security monitoring (including signal compliance and PRS Security Message verification)
- Response to European GNSS crisis and security events;
- Process management, such as the dissemination of Standard Operating Procedures SOPs;
- Fulfil the Crypto Distribution Authority Roles, including the flight key management flight;
- Provision of European GNSS security expertise and analysis.

The operation of the GSMCs within the Galileo system is the responsibility of the GSA. In order to prepare for the operation of the GSMCs, a number of preparation tasks will need to be carried out by the GSA .

The GSA tasks on GSMC Operation and Operations Engineering are performed in the framework of the Galileo FOC procurement programme and of the overall operation of the Galileo system.

In this context, the GSA is required to perform a variety of operations engineering tasks at different levels.

The GSA has been requested to take a more proactive role in the provisioning of hosting services and in the coordination of activities of the different stakeholders that will contribute to the GSMC development.

7.1.2.1 GSMC Operations Engineering

The GSA as the operator of the GSMC will need to undertake a number of operations engineering activities to prepare the necessary operational documentation for conducting GSMC operations. The GSF PDR identified the fact that this activity is not

covered by the GSF contractor and is also not part of the Galileo operations preparation work, which takes place in Galileo FOC procurement (WP6). At the GSF PDR, the general view was that this work should be carried out by the GSA in line with "normal" best practice as this ensures the operator is involved in the development process.

At present, the European Commission has defined and released, in July 2011, a Statement of Work detailing all the Operations Engineering tasks that the Agency is responsible for completing.

7.1.2.2 GSMC Nucleus Activity

As of the first launch of the operational satellites the GSMC function has been considered as a necessity. In such a context the Agency has established the so called GSMC nucleus which is expected to guarantee the GSMC function, with reduced objectives, up to the moment in time when GSMCs will be deployed and fully operational.

The Agency will need to ensure that it continues to fulfil and strengthen this role with respect to the operation of the GSMC Nucleus in line with Galileo security requirements and arrangements agreed in the second half of 2011 with the Commission, ESA, EEAS and Member States to provide Galileo security monitoring in advance of the completion of the GSMC.

7.1.2.3 GSA Contribution to Infrastructure Development

Contribution to WP2:

The GSA will participate in a number of project reviews, which are designed to ensure the alignment of the equipment procurement with the operational concept. The GSA will also need to contribute to a number of reviews conducted by the Operator of the GCCs to ensure that the overall service level CONOPS of the Galileo system have been implemented in each facility.

Contribution to the GSA Building Infrastructure:

The GSA will need to provide the GSA's operator specific hosting requirements to ESA which will need to be included in the requirements (and validation of delivery thereof²³) with the Hosting Entities (HE). The GSA in so doing, will also specify its needs for GSMC Administration Equipment Deployment (see 7.1.2.6).

In advance of the handover of the GSMC buildings to the GSA from the Hosting Entities, the GSA will also need to negotiate the necessary long term HE support of the GSMCs. The current expectation is for this HE support agreement to be negotiated and signed before the start of IOC GSMC operations. An interim agreement may be required to cover the validation and qualification activities. The GSMC Manager will carry out the negotiation of long term HE support. The expected time frame for this activity is the second half of 2012.

7.1.2.4 GSA Support of the ESA lead GSMC Qualification Programme

The GSA as the GSMC operator will need to supply trained operators to support the work of the WP2 contractor in qualifying the GSMCs.

The GSA will also need to contribute to the GSMC and POCP testing and verification phase by providing the first line maintenance personnel to test both the maintenance plans and the integrated logistics support. GSA technical staff will need to validate the maintenance procedures provided by the WP2 (GMS) contractor.

²³ In 2012, only detailed designs only will be delivered by the hosting entities, actual full delivery is only planned in 2013.

The GSA will need to provide inputs to the accreditation of the GSMCs as detailed in the Statement of Work to be provided by the European Commission.

7.1.2.5 GSMC Staff Recruitment and Training

A detailed recruitment plan has been prepared by the GSA Security Department, covering the period 2011-2014²⁴, including the recruitment of 34 positions for the two sites (FR & UK) of the GSMC (1 in 2011, 12 in 2012, 11 in 2013, 10 in 2014). This plan is based on the assumption that the final acceptance review of the GSMC is expected to take place 4 years after the kick off, which would mean the transfer of a fully operational GSMC to the GSA at the beginning of the 4th quarter of 2014.

As part of its role as the operator of the GSMC, the GSA will need to ensure from 2012 that a suitable training programme is put in place for the GSMC operators. In that respect, the GSA shall prepare the Operations Training Needs Analysis (TNA) document, to process all information relevant for the definition of training requirements. It shall also provide an Operations Training Plan, and set up and maintain a Training Management System (TMS).

For each new facility or upgrade the GSA shall continuously identify the training needs required for its operations, organise the required training sessions and update the personal training records accordingly.

In defining the Operations Training Plan, the GSA shall consider the coordination of operations team training. The GSA shall also consider the participation of personnel from the EC & ESA, Member State POCs and the GSF Segment Contracts personnel.

7.1.2.6 GSMC Administration Equipment Deployment

This work covers the administrative work necessary to setup two centres of the GSMC, a master and a backup.

It includes the procurement and configuration of the necessary IT infrastructure to allow GSMC staff to be connected to the administrative IT networks of the GSA.

Further, there will need to be work internal to the GSA to create the framework and to organize the operational activity of the GSMC staff.

7.1.2.7 Preparation of the Crypto Distribution Authority

During 2011, the Flight Key Cell Working Group is preparing a long-term plan for the management of operational cryptographic material relevant to the Galileo programme. At present, their draft plan calls for the Galileo Crypto Distribution Authority to be hosted by the GSMC, as required by the SSRS 3.9.

The GSA will need to follow this work during 2011 and, assuming that the GSMC is confirmed as the hosting entity for the Crypto Distribution Authority, the GSA will need to continue this activity in 2012, and especially to:

- Prepare the CDA SOPs
- Ensure that the equipment necessary for the CDA is procured
- Ensure that the GSMCs have space to accommodate the operational needs of the CDA team
- Update the GSMC recruitment plan to include the CDA team

²⁴ "GSA Security Team 2010 and Recruitment Plan 2011-2014", GSA/2010/D492265, V1.0, 14 January 2011.

7.1.2.8 Preparation of PRS Service Provision

The GSA expects the EC to confirm the GSMC as the PRS Service Provider. During 2012, it will be necessary to align the work of the GSA's PRS Team on the preparation of the PRS Service with the work of the GSMC.

While significant GSMC effort on PRS Service Provision is not expected to take place before 2013, some preparatory activities may be needed in 2012.

7.1.2.9 EC-GSA Working Arrangement on GSMC²⁵

In order to ensure the performance of these activities and optimise the interaction with the EC, the following tasks fall within the responsibilities of the Agency under this working arrangement:

1. Responding in time to any EC request, for review of documentation produced by the Galileo Programme under the IOV, IOC and FOC phases linked to the GSF;
2. Participation as observer to the Program Change Control Board, Program Management Meetings and, depending on the agenda, to the Quarterly Project Meetings;

In addition to the above the Agency can provide technical assistance to the EC in order to:

1. Support the definition and update the GSMC development plan under the responsibility of the EC, as required by events;
2. Support the definition and update of the GSMC risk register under the responsibility of the EC, as required by events;
3. Support the definition and update of the plan of needed program decisions under the responsibility of the EC, to facilitate operation hand-over to the Agency, as required by events;
4. Provide a report to the CPM of the main issues/findings after each review;
5. Participate in the monitoring of the GSF (GSMC & POC-P) infrastructure development and deployment in order to prepare the recruitment, training and deployment on sites of the staff in charge of operating the Galileo Security Centre. For the POC-P to be deployed in Member States, the Agency will contribute to develop guidelines and, if needed, to develop training.
6. Follow-up the GSF technical definition and procurement undertaken by ESA in order to develop the knowledge and expertise associated to its future role of operator for the Galileo Security Monitoring Centre and for contributing to the qualification of the GSF when requested by the Galileo Programme.
7. Develop the GSMC operational concept (CONOPS) and the corresponding operational procedures, especially taking into account the management of the GSMC interfaces, for approval by the Commission.

²⁵ As defined in the "Agreement in the form of Exchange of Letters on a Working Arrangement for the execution of security related tasks of the European GNSS programmes between the European Commission and the European GNSS Agency", Ref. ENTR/GP2 AN/am Ares (2010)1087450 dated 28 January 2011. Note that an update of this Working Arrangement, is currently being discussed between the GSA and the EC as reflected in the letter GSA/2011/OED/D540010 of 16 September 2011 and reflecting the meeting held on 8 September 2011 with the EC.

8. Contribute in the specification and validation of the "Man-Machine Interface" and develop tools, such as PROPHET, with the close cooperation of ESA for the validation of the simulations, to anticipate the installation of GSMC & POC-P and to optimize the use of the system. Some of the tools will be MS oriented.

7.1.3 Support to PRS Service

7.1.3.1 Implementation of the PRS Pilot Project

PIONEER (Program for the Initial Operations using National and European Equipments towards the Regulated service) is the GSA contribution to the realisation of the PRS Pilot Projects (PP).

The PRS Pilot Project is driven by the EC and is fundamentally designed for the benefit of Member States to stimulate and support their implementation of PRS infrastructure and services.

The PRS Pilot Project will comprise multiple projects with differing specific objectives, participants and timescales.

The nature of the programme and its constituent projects will evolve. Currently, the following four stages have been identified (which may overlap in practice):

- PRS Awareness Stage (2011-2012) - to engage stakeholders and initiate projects and define technology;
- Pilot Preparation Stage (2012-2014) - clarifying user needs, service definitions as well as design and development of tools and processes as well as the procurement of a first generation of operational PRS receivers ;
- Trials Stage (2013-2014) - for both equipment and processes, using IOV (and then IOC and FOC) capabilities and prototype and early PRS receivers - the key milestone here is likely to be OSRR3 in 2014, when the fuller constellation and GSMC operation will enable meaningful FOC trials;
- PRS Pre-Accreditation phase (2015-2016) - the Galileo system will progressively become operational but full accreditation will still be in the process of being obtained, including for production receivers.

PRS Pilot Projects are grouped in two categories:

- Priority Projects (PPs), which provide direct benefit to member States;
- Enabling Projects (EPs), which are required to implement the PRS user segment roadmap.

Initial Projects that are foreseen in 2011-2012 timeframe are the following:

Projects already confirmed by the Commission

- PIONEER 1 (2011-2015): this program represents the Central Support, including coordination, PRS awareness and support to the user's segment roadmap.
- PIONEER 2 (2011-2014): this project concerns the procurement of PRS Receivers, in order to provide a first generation of PRS user receivers that will allow making the demonstration of the performances of the PRS service as compared to other GNSS services and alternative solutions. This project is both a long-lead-item procurement and a capability that will support most of the PRS Pilot Projects activities.

Projects to be confirmed by the Commission

- PIONEER 5 (2012-2014): FP7 PROGRESS contract has paved the way to PRS receiver standardisation. Further works will be necessary to maintain the benefits of this initiative and develop new items, to continue and complete the activities of PROGRESS, to be concluded in February 2011.
- PIONEER 6 (2012-2013): FP7 PROTECTOR contract has highlighted the limitations in the current capabilities to fight against jamming of GNSS; given our increasing dependability on GNSS and the easiness of deploying a jammer, the risk of having to face a major incident is becoming an issue. Countering low-power jammers and their proliferation is also to be considered as a real challenge. As a follow-up of PROTECTOR, this project should tackle the definition and development of a low-power jammer detector prototype.
- PIONEER 7 (2012-2014): Several studies show that acquisition of the PRS signal is a technological challenge for receivers, and more especially when combined with other constraints such as cost, power consumption and security. This issue was foreseen by PACIFIC and it is also considered by PROGRESS. The development of a Fast Acquisition Unit (FAU) ASIC would alleviate a big part of these difficulties, with the benefit of being usable as such or as an IP (Intellectual Property) function block. The ASIC as such may be reused in future first generation of PRS receivers while the IP result may be integrated in next generation products.
- PIONEER 8 (2012-2014): There exists different kinds of jamming signals, and several kinds of techniques have been developed to counter those interferences. However, these signal processing techniques may not be put in service when they have no benefits, thereby saving power consumption and not adding any degradation to the incoming signal. A jamming supervisor function could be conceived to automate the processing of interferences.
- PIONEER 9 (2012-2014): FP7 PROTECTOR is currently defining the architecture of the Jamming and Interference Monitoring System (JIMS) concept. Further simulations are expected to support this definition and to validate the operation concept with other stakeholders, essentially Member States administrations, both those in charge of Spectrum management and those in charge as point of contact for GNSS matters.
- PIONEER 10 (2012-2013): previous studies have demonstrated that a large part of Military users of the PRS would be interested to have this function combined with the GPS PPS. This study shall be limited to complete the work done in PROGRESS on dual mode receivers. This work is however subject to the agreement to get US FOUO and NATO RESTRICTED documents from authorised administrations.

7.1.3.2 EC-GSA Working Arrangement on PRS Pilot Project²⁶

In order to ensure the performance of these activities and optimize the interaction with the EC, the following tasks fall within the responsibilities of the Agency under this working arrangement:

1. Support the preparation of calls for tenders, selection, negotiation and award of contracts related to the implementation of the PRS Pilot Project, notably the P3RS1;
2. Perform the budget implementation tasks that may be delegated by the Commission to the Agency in accordance with Article 54 (2) (b) of the Financial

²⁶ As defined in the "Agreement in the form of Exchange of Letters on a Working Arrangement for the execution of security related tasks of the European GNSS programmes between the European Commission and the European GNSS Agency", Ref. ENTR/GP2 AN/am Ares (2010)1087450 dated 28 January 2011.

Regulation in 2011, on further PRS Pilots project contracts, notably the P3RS2, on the basis of an early preparation of the tenders;

3. Interact on a day to day basis with industry and manage the contracts of the PRS Pilot Project starting at the kick off of the contract and ending at the final review and advises the Commission on the approval of the main documents;
4. Provide expertise and support to the GNSS Security Board Working Group PRS (WG-PRS), especially regarding the definition of guidelines, common minimum standards and rules for the management of PRS in EU Member States and the definition and implementation of the PRS implementation plan.
5. Participates to the WG-PRS and report on the progress of the PRS pilot projects contracts.

In addition to the above the Agency can provide technical assistance to the EC in order to:

1. Propose an assessment of the main performance criteria of the contracts to the EC for the main contract reviews;
2. Provide its secured zone and Administrative security capacity to manage the security of the contracts as well as to store or test any material or immaterial outputs of the contracts which would be classified;
3. Support the evaluation of the proposals and ensure the secretariat of the evaluation panels, in cooperation with the EC;
4. Prepare documents in the form of minutes, technical notes, analysis, draft Statement of works, draft contracts or draft Document Change Notices, as required, depending on the topics.

7.1.3.3 EC-GSA Working Arrangement on PRS User Segment²⁷

In order to ensure the performance of these activities and optimize the interaction with the EC, the following tasks fall within the responsibilities of the Agency under this working arrangement:

1. Performance of budget implementation tasks that may be delegated by the Commission to the Agency in 2011 in accordance with Article 54 (2) (b) of the Financial Regulation, on PRS-related contracts;
2. Participation to the WG-PRS and report on the progress of PRS User Segment implementation tasks, including in particular the PRS FP7 projects contracts and the Agency expertise support contracts;

In addition to the above the Agency can provide technical assistance to the EC in order to:

3. Develop the concept of a low cost PRS receiver, validate it with the EC and contribute to the development of low cost PRS receivers;
4. Develop cost studies, taking into account the cost of management of PRS receivers. The objective of such studies will be in particular to optimize the overall

²⁷ As defined in the "Agreement in the form of Exchange of Letters on a Working Arrangement for the execution of security related tasks of the European GNSS programmes between the European Commission and the European GNSS Agency", Ref. ENTR/GP2 AN/am Ares (2010)1087450 dated 28 January 2011.

cost of PRS receivers (taking into account the price of human resources, the key management, maintenance, etc. on the duration of life of receivers);

5. Support the development of demonstrators of PRS receivers, in particular adequate for the purpose of trials foreseen in the PRS Pilot Project;
6. Develop roadmaps, trials, development of facilities and other documents;
7. Prepare documents in the form of minutes, technical notes, analysis, draft Statement of works, draft contracts or draft Document Changes Minimum notices, as required, depending on the topics.

7.1.4 EC-GSA Working Arrangement on GNSS Security Board and associated Working Groups²⁸

In order to ensure the performance of these activities and optimize the interaction with the EC, the following tasks fall within the responsibilities of the Agency under this working arrangement:

1. Participate at the meetings of the GNSS Security Board and contribute to the reporting associated to the WG-PRS, the WG-NET, the WG-PCI, the TF-Control, and the TF-Launch, or any ad hoc group created under the GNSS Security Board roadmap as requested by the EC;

In addition to the above the Agency can provide technical assistance to the EC for:

2. Provision of technical, secretarial and logistical support to the WG-PRS and its subgroup WG-CMS;
3. Technical support to the WG-NET and to the WG-PCI;
4. Chairing and providing of technical, secretarial and logistical support to the TF-Control;
5. Preparing documents in the form of minutes, technical notes analysis or draft DCNs, as required, depending on the topics.
6. Establishing and managing a DMS ensuring a coordination and update of the GNSS Security Board documentation, the Systems Security Accreditation documentation and of the PRS User Segment documentation.
7. Generating and distributing Chiasmus keys needed by the GNSS Security Board related groups of participants.

7.1.5 EC-GSA Working Arrangement on European GNSS Technology Control Regime²⁹

In order to ensure the performance of these activities and optimize the interaction with the EC, the following tasks fall within the responsibilities of the Agency under this working arrangement:

1. Ensure the chairmanship, the secretariat and logistical support of the TF-Control.

²⁸ As defined in the "Agreement in the form of Exchange of Letters on a Working Arrangement for the execution of security related tasks of the European GNSS programmes between the European Commission and the European GNSS Agency", Ref. ENTR/GP2 AN/am Ares (2010)1087450 dated 28 January 2011.

²⁹ As defined in the "Agreement in the form of Exchange of Letters on a Working Arrangement for the execution of security related tasks of the European GNSS programmes between the European Commission and the European GNSS Agency", Ref. ENTR/GP2 AN/am Ares (2010)1087450 dated 28 January 2011.

In addition to the above the Agency can provide technical assistance to the EC in order to:

2. Propose and update European GNSS technology control regime objectives and requirements, which shall be validated by the EC;
3. Identify the tools and methods that can be used to actually enforce the European GNSS technology control regime;
4. Provide support to the EC for the initial implementation of the European GNSS technology control regime;
5. Prepare documents in the form of minutes, technical notes, analyses or draft Document Changes Minimum notices, as required, depending on the topics.

7.1.6 Support to the development of the PRS User Segment³⁰

As defined in the "Agreement in the form of Exchange of Letters on a Working Arrangement for the execution of security related tasks of the European GNSS programmes between the European Commission and the European GNSS Agency"³¹ and subject to the finalisation of the Delegation Agreement by EC, the Agency shall support the PRS Pilot Project, the GNSS Security Board and associated Working Groups (especially the Working Group PRS). This is an extensive list of tasks and in the majority of cases they are not explicitly within the remits of the GNSS/GNSS Agency regulations.

Indeed the proposed 'Galileo IOC Service Implementation Plan', considering the role of the Agency as GSMC Operator, is proposing that the GSA becomes the PRS Service Provider. This perspective will need to be consolidated through appropriate studies developing core mission requirements of the PRS Service Provider and related implementation plan, in line with the PRS Service Implementation Plan developed by the European Commission.

The "Decision of the European Parliament and of the Council on the detailed rules for access to the public regulated service offered by the global navigation satellite system established under the Galileo programme"³² gives the Agency specific responsibilities. In particular, the Agency:

- i) is designated as a Competent PRS Authority by a PRS participant;
- ii) shall ensure that the Competent PRS Authorities comply with the minimum common standards, in particular by carrying out audits or inspections;
- iii) shall provide technical resources to Competent PRS Authority that does not comply with the minimum common standards. Some preparatory work will have to be achieved by the Agency to fulfil its obligations as stated in this Decision, especially the further operations by the GSMC of the local Point of Contact Platform (POCP) and the development of the minimum common standards.

In this context the Agency, subject to the finalisation of the Delegation Agreement by EC, will start to develop all those preparatory tasks needed to achieve such objectives, such as:

- a. Supporting of market development of PRS
- b. Definition of the missions of a PRS Service Provider

³⁰ This is a delegated task under a new Delegation Agreement to be finalised between the GSA and the Commission for an amount of 1.5 M€

³¹ Ref. ENTR/GP2 AN/am Ares (2010)1087450 dated 28 January 2011

³² Decision No 1104/2011/EU, OJ L287,4.11.2011, p.1

- c. Support to the Commission on the definition of policies (e.g. CMS)
- d. Promotion of a new approach for countering RFI threats on GNSS services
- e. Accreditation of the RUE network connecting GSA PRS DMS server to MS' remote servers

7.2 Market Development

In early 2011, the Commission presented to the Council an official communication on the post-2013 operations of the GNSS systems. The GSA's activities in the field of market development build on this proposal, with a focus on market entry and business development actions in line with different exploitation scenarios of the Commercial Service, consistent with the guidance of the Commission.

GSA activities will also contribute to, and will be aligned with, the Application Action Plan³³ (GNSS APAP) adopted by the Commission in June 2010³⁴. They will continue to be coordinated with the relevant activities undertaken by the European Space Agency and the European Commission and where appropriate inscribed in the joint annual GNSS Communication Strategy of the three organisations.

³³ List of actions established by the European Commission in order to foster the development of the applications of Galileo and EGNOS.

³⁴ COM(2010)308, 14.6.2010

Contribution to the preparation of the commercialisation of the systems

Important benefits of the European GNSS programmes will come from the market place, as underlined by the Commission in its communication to the European Parliament and the Council³⁵.

Following the entry into force of the GNSS Regulation, the GSA has been assigned the task of contributing to the market take-up of the GNSS systems in order to reap the maximum benefit from the systems. This task, as defined by the Commission guidelines, can be grouped in three main axes of activity:

- Foster and support of progress of European GNSS systems:
 - o EGNOS, which reached full operational capability through the declaration of availability of the EGNOS Open Service on 1 October 2009 and the declaration of SOL service on March 2 2011.
 - o Galileo, whose market entry needs to be prepared as from 2012;
- Understanding the potential and main trends of the GNSS market, i.e. assessing the environment in which satellite navigation applications can develop, including downstream markets, assessing the various options for improving the dynamics of the market (leveraging insights from market monitoring, providing information and assistance tools for potential users and developers), and making suitable recommendations to the Commission; and
- Contributing to the development of the market with actions to encourage the take-up of European GNSS services, leveraging on FP7 application projects with a particular focus on supporting SMEs and promotional initiatives.

The GSA activities will be implemented in close coordination with the Galileo units of the European Commission. The two sides will exchange on a regular basis information (at least every 3 months) on topics such as planned activities, conferences to be attended, meetings to be organised, articles to be published, studies to be performed, and contracts to be signed.

7.2.1 EGNOS marketing

The first axis is intended to ensure the adoption of EGNOS in market segments identified as having the greatest short-term or medium-term potential. The development of penetration in EGNOS target segments will leverage on the FP7 activities, which have been delegated to the GSA by the Commission.

In 2009, the GSA proposed to the Commission that EGNOS market entry activities should target three priority market segments selected on the basis of their respective potential in terms of economic benefits and maturity: aviation, which will remain a priority, followed by road and high precision segments such as agriculture and mapping. Achieved penetration results show a growing trend and existing opportunities require a continuation of marketing actions. On top of this, growing GNSS interest arises in further segments. This will have to be managed on a best effort basis, considering the GSA's growing number of market related tasks in a scenario of stable dedicated staff and significantly decreasing budget.

The promotion of EGNOS will require extensive contributions to the work coordinated by the Commission with Member States, user communities and all agents of the value chain.

³⁵ COM(2007) 534 final, 19 September 2007.

In 2012, one of the key pillars will continue to be EGNOS' entry in the aviation market. To this purpose, the GNSS Agency will enact the market entry strategy for Aviation in line with the Application Action Plan. The GNSS Agency will keep on contributing to the promotion of adoption schemes for aviation via initiatives targeted at airlines and airports, leveraging on FP7 call projects and on partnerships with major stakeholders such as Eurocontrol and manufacturers of avionics and aircrafts. The GSA will exploit FP7 projects results like successful trials and adoption experience.

In 2012 the GSA will maintain its actions to increase the adoption of EGNOS in Road Pricing. In particular, it will leverage on the EETS Decision of the Commission that foresees the start-up of this new service in October 2012, preparing the industry and the service providers for EGNOS and Galileo adoption in this new pan-European tolling service. At the same time, the Agency will start focusing on other ITS sub-segments, such as safety systems and assistance to the driver and specialised logistics. It will leverage on results of FP7 projects in this domain (final results from the 2nd call and preliminary results from the 3rd call). It will ensure a well-structured presence at the ITS World Congress that will be back in Europe.

In 2012, the GSA will continue the marketing of EGNOS in Agriculture, with the ambitious goal to reach 70% market share among GNSS devices in Europe. It will continue to focus on Eastern and Central Europe where it is expected that the performances of EGNOS will be improved. Additionally the Agency will support the EC in cooperating with JRC regarding the Common Agriculture Policy. In addition, the Agency will continue the marketing of EGNOS in Mapping, identified as another priority sub-segment in the High Precision domain.

The beta test of EDAS, started at the beginning of 2009, is the first small scale proxy of a potential European GNSS commercial service. It provided important information regarding demand (e.g. customer profile and benefits, market potential) and suitability of the current mode of access to service data. The GNSS Agency evaluated the economic potential, designed the service model and identified service improvements. The Commission is managing the implementation of service improvements, which should be made available to existing users. EDAS will then be an integral part of the EGNOS offer in road, agriculture and mapping and will be marketed in conjunction with EGNOS, once the expected release is available.

Finally, the GNSS Agency will help communicate the operational status of EGNOS to the market, including effective communication of EGNOS value proposition and developing specific instruments to raise EGNOS awareness in target segments.

Main tasks in 2012

- Promote the utilisation of the EGNOS open signal and safety-of-life service, continue the actions of the EGNOS market entry strategy, exploit FP7 related projects demonstrating EGNOS benefits, and track impact and market indicators;
- Step up EGNOS marketing activities for aviation;
- Continue to implement the EGNOS market adoption plan for road;
- Strengthen EGNOS leadership in agriculture including support for EC regarding CAP;
- Implement the market entry approach for the mapping segment;
- Continue to contribute to the EDAS related promotional activities and launch new activities for the enhanced EDAS as soon as available;
- Contribute to EGNOS marketing communication initiatives;

7.2.2 Market monitoring

The second axis is improving the knowledge of the market. The market monitoring and forecasting process is key for this activity. It provides a structure for the market research data. Market analyses and forecasts based on this information enable a better understanding of the GNSS market and of the overall public benefit created by the systems. The GSA and the Commission will closely coordinate, ensuring availability and use of the most updated information, contributing to the Commission communication policy. As the market is continuously evolving, an effort is needed to ensure the models remain up to date. In addition, it is important to make sure the process remains aligned with market development activities and that it allows the GSA to track progress in the different markets and define specific targets. To this end, starting in 2011, we will start to integrate new segments (e.g. surveying, maritime).

The market monitoring process is also used to respond to ad hoc requests from the Commission for the further implementation of the European satellite navigation programmes.

Finally, another objective of the market monitoring process is to supply information to industry and general public. It is the intention of GSA to release a report on the GNSS market every year.

With regards to new applications, the GNSS Agency will continue to follow closely the development of the market using information available on the market and on the evolution of technologies..

Hereby, the GSA will increase its interactions with representative market agents (e.g. focus groups).

Main tasks in 2012

- Regularly refine and improve the Market Monitoring and Forecasting process³⁶, in order to reflect changes in the market, in technology and in the priorities of market development activity;
- Act as a source of GNSS market information for the Commission, responding to ad-hoc requests.
- Inform the general public about the development of the GNSS market through the publication of a market report.

7.3 Research and Development

7.3.1 FP7

As outlined in the Commission guidelines, FP7 projects on applications and security R&D will be managed by the GNSS Agency in accordance with the terms of the Delegation made under Article 54(2)(b) of the Financial Regulation and with the working arrangements agreed with the Commission in relation to the PRS applications and to the security related R&D activities.

In managing the projects, the GNSS Agency's objectives are:

- To keep the projects in line with the strategic objectives;
- To maximise the project results; and
- To produce an effective communication action for each project.

The supervision of the projects from the FP7 1st and 2nd calls will continue. By mid-2012 a total of 51 projects (covering both satellite navigation applications and security) shall be managed by the GNSS Agency.

At the Commission's request, the GSA has prepared and launched the FP7 3rd Call, in the second half of 2010, leveraging on the proven methodology and the experience and initial results of the FP7 1st and 2nd call projects.

The handling of a new FP7 call (from the preparation of the publication to the signature of the grant agreements or contracts) consumes considerable resources and has to respect strict deadlines. This work has to be closely coordinated with the management of the portfolio of on-going projects from previous calls. A peak in the workload under FP7 is expected in the 2011-2012 timeframe.

7.3.1.1 Satellite navigation applications development and promotional initiatives

18 projects were launched in 2008 under the FP7 1st call and 29 in 2009 under the FP7 2nd call. A further 30-35 were launched mid-2011. Taking into account the closure of many 1st call projects it will mean that, at the beginning of 2012, up to 60 application projects will be running.

Following the adoption of the work programme for the FP7, the 3rd call for proposals was launched on 20 July 2010 supporting a vertical market acceleration strategy and an action plan to stimulate the most valuable or mature market segments, also offering opportunities for break-through innovation independent of the area of application. A total of 148 proposals were received resulting in 30-35 projects that can be funded.

³⁶ Provides reliable GNSS market information and revenues projections, covering global GNSS market, Galileo and EGNOS contribution and indirect public benefits.

In 2011 a new portfolio management approach will be rolled out to manage the projects in a more efficient way and exploit even better the project outcomes. This will involve e.g.

- Increasing the effectiveness of ongoing projects by ensuring a focus on concrete objectives, providing access to specialised knowledge and information and supporting in the dissemination of results;
- Identifying synergies between projects and with national projects;
- Exploiting to a maximum current and past project outcomes.

Main tasks in 2012

- Manage and close-out the FP7 1st call and FP7 2nd call ongoing projects – maximising project outcomes; this assumes availability of mission budget to allow participation to key reviews;
- Launch and manage 3rd call projects;
- Promoting FP7 achievements by preparing a dedicated brochure on first results of the programme.

7.3.1.2 Support activities in the security domain

FP7 2nd call contracts still leaving in 2012 on security and PRS are the demonstrator of anti-tampering technologies at receiver level (FORTRESS³⁷) and a PRS management simulation tool to support the PRS pre-operational phase (PROPHET³⁸).

In the FP7 3rd call, 4 to 7 security related projects are likely to be funded.

The activities outlined in this chapter will be performed in accordance with the terms of the Delegation of the Commission to the GSA on FP7 and in accordance with the working arrangements agreed with the Commission as well as in accordance with other guidelines provided by the Commission in relation to the PRS applications and to the security related R&D activities.

Main tasks in 2012

- Management and close out of the last FP7 2nd Call contracts (FORTRESS, PROPHET);
- Launch and management of security related projects under FP7 3rd call;
- Implementation of a full technological roadmap for the FP8

³⁷ FORge of Tamper-RESistant Security module.

³⁸ PROPHET: PRS Operations Performance Handy Evaluation Tool.

7.3.2 GKMF

The virtual library known as GKMF was open to limited public access through the Internet in January 2009. In 2010, the two years of production have provided enough experience and a review of its functionality and an upgrade of the capacity are most probably necessary.

In 2011 all the information on the systems and results of the R&D projects continues to be uploaded, structured and made available through secured access, according to the privileges assigned to users. Other information needs to be added, in order to cover the widest possible range of relevant activities. In addition, information from the virtual library that is publicly accessible will be made available through satellite navigation-related web portals. GKMF will also be an important tool for the dissemination of the results produced under FP7 and other research and development programmes.

Main tasks in 2012

- Upload of new information on the systems and results of the R&D projects;
- Improve and upgrade the GKMF platform;
- Convert GKMF from a purely 'Document Management' tool to an 'Information Management' tool;
- Integrate GKMF with information systems from third-parties; and
- Analyse how to best encode business intelligence into GKMF

7.3.3 Application Projects with MATIMOP – Israeli Industry Centre for R&D

Following a request by the Commission³⁹ the GSA will continue the activities for the implementation of the GIUS-1 and GIUS-2 projects until further notice. Such implementation is done according to the terms of the cooperation agreement with MATIMOP, which the GSA inherited from the GJU. The Commission will notify the GSA as soon as possible on the further cooperation scheme with Israel.

Main tasks in 2012

- Review the ongoing projects in GIUS-1 and GIUS-2;
- Valorise the results of the related projects;
- Update the hand-over files for the Commission.

7.4 Exploitation Tasks⁴⁰

For both Galileo and EGNOS there is a need to address urgent decisions and related preparatory actions in view of the significant milestones to be achieved in 2014 (EGNOS long term exploitation phase) and Galileo IOC on 2015 (Galileo early service

³⁹ See Letter of the Commission of 17 February 2010 (TREN/G4/D/201052237) to the Israeli authorities, Letter of the Commission of 12 July 2010 to the GSA (ENTR/F3/ST/mb D(2010)458158) and letter of the GSA to the Commission of 29 July 2010 to the Commission (GSA/2010/MKD/OED/D465677)

⁴⁰ These are delegated tasks under the Delegation Agreement on additional tasks to be finalised between the GSA and the Commission.

provision). Subject to the finalisation of the Delegation Agreement by EC, the Agency will carry out the following key tasks for the preparation of EGNOS and Galileo exploitation.

7.4.1 EGNOS Exploitation Preparatory Tasks

EGNOS will face a crucial transition in June 2014, which is the point in time when the ESSP contract will come to an end. The Agency shall, in this respect, carry out the following support activities:

1. Definition of perimeter of the EGNOS service provisions and operations contract/delegation as of 2014 (scope, length, price target, etc...);
2. Definition of perimeter of delegated ESA tasks as of 2014 (scope, length, price target, etc...);
3. All activities related to the preparation of EGNOS Service provisions and operations contract/delegation (tender, evaluations, negotiations);
4. Preparation of ESA delegation agreement;
5. Cooperation/dialogue with stakeholders in the field of aviation, including Eurocontrol;
6. Development of EGNOS evolution roadmap;
7. Transition planning.

At the request of the Commission, the GSA has implemented an EGNOS Applications Development Portal⁴¹, aggregating information of special interest for investors, developers of new applications and potential users in general. Subject to the finalisation of the Delegation Agreement by the EC the Agency will devote special attention to improving this portal. Providing the availability of the required resources and budget, the Agency will ensure that the information provided on the portal is up to date, will maintain and monitor the portal efficiently, and professionally leverage social media technologies to promote the portal and facilitate the networking of target users.

The Commission intends to delegate to the GNSS Agency the operational aspects of a SMEs support programme to provide information on GNSS and foster adoption of the systems. The GNSS Agency will - subject to obtaining the required financial and human resources for this new task - assist in setting up the scheme, supervise the operations, organise events and report to the Commission.

The conclusion of a delegation agreement on the implementation of EGNOS exploitation preparatory tasks is subject to the Commission final decision on the matter.

7.4.2 Galileo exploitation preparation tasks⁴²

GALILEO as well will face a critical transition in 2014/15, which is when early Galileo services will be made available (Initial Operation Capability – IOC). Similar to EGNOS, exploitation preparation tasks will be carried out in 2012:

1. Definition of perimeter of the service provision/operational contract (scope, length, price target, etc.)
2. Definition of perimeter of delegated ESA tasks (scope, length, price target)

⁴¹ On-line web interface gathering information on EGNOS.

⁴² These are delegated tasks under the Delegation Agreement on additional tasks to be finalised between the GSA and the Commission.

3. Completion of preparatory tasks related to the procurement/delegation of a service provision contract/delegation of Galileo early service provision and operations at IOC.

The implementation of the above-described exploitation preparatory tasks can only be carried out through a regular day-to-day interaction between the Agency's and the Commission's EGNOS and Galileo technical teams as well as the ESA's ones.

Subject to the finalisation of the EC Delegation Agreement by EC, the Agency will start Galileo Open Signal (OS) exploitation preparation activities. This will include management of the OS SIS ICD license agreement. In this context the Agency will coordinate "help desk" activities, aiming at addressing all the questions which may rise from users, application, platform, chipset and receiver developers, following the launch of the first two (IOV) operational satellites.

Subject to the finalisation of the Delegation Agreement by EC, as for the development of trusted position service, i.e. commercial service, the Agency will test most promising market segments such as Road Management and ADAS. This will encompass activities such as tendering, technical and market studies.

Main tasks in 2012

- Promotion of the EGNOS Applications Development Portal;
- Assist the Commission in the SMEs support programme;
- Launch EGNOS and Galileo exploitation preparatory tasks for 2014/2015;
- Preparation of exploitation of Galileo OS including management of OS SIS ICD license agreement;
- Help the Commission in the definition and preparation of the Galileo commercial service⁴³, including tendering and studies;
- Define exploitation preparation actions towards PRS users adoption⁴⁴.

7.5 EC Application Action Plan Implementation Tasks⁴⁵

Subject to the finalisation of the Delegation Agreement by EC, the Agency will carry out the following priority actions derived from the aforementioned EGNOS market entry and especially for the for the emerging Galileo market preparation task, in the context of the Commission EC GNSS Application Action Plan encompassing 24 actions, across different vertical markets.

The Commission has requested GNSS Agency's support on:

- The delivery of specific activities planned in the EC GNSS Application Action Plan (APPAP);
- The set up, maintenance and regular upgrade of a detailed monitoring system that will periodically report
 - o on key market figures that the GNSS APPAP is targeting⁴⁶;
 - o on the status of the execution of the 24 actions of the GNSS APPAP, their impacts and related key performance indicators.

The single actions will be coordinated and detailed with the European Commission.

Also, and subject to the finalisation of the Delegation Agreement by EC, the Agency will launch an application development impact assessment based on key elements such as:

- Evaluation of economic and social impact, such as environmental impact, creation of jobs, etc., and the launching of related consultation projects. This shall also aim to give input to different policy options as for Horizon 2020.
- Preparation of reports and integration with APPAP impact assessment.

In order to follow the market trends and gather relevant insights to stimulate a wider Galileo adoption, subject to the finalisation of the Delegation Agreement by EC, the Agency will initiate technology-monitoring activities. Interaction with receiver and

⁴³ Subject to the availability of a new person in 2012 for PRS and Trusted Position marketing

⁴⁴ Subject to the availability of a new person in 2012 for PRS and Trusted Position marketing

⁴⁵ These are delegated tasks under the Delegation Agreement on additional tasks to be finalised between the GSA and the Commission.

⁴⁶ As described in the Commission communication COM(2010)308 of 14.06.2010 to the Council of the EU and European Parliament

chipset manufacturers will be pursued in order to stimulate and foster plans for Galileo adoption.

Subject to the finalisation of the Delegation Agreement by EC, a new in depth analysis of EU share on GNSS application market will be carried out. This shall complement the before mentioned analysis.

Finally, a new segment identified together with the EC is Maritime. Based on the 'Prioritization of sub-segments and applications' study conducted in 2011 and subject to available resources and priorities as to the finalization of a Delegation agreement, a set of actions (in line with the EC Application Action Plan) will be defined and carried out in 2012, namely: awareness of the current use and further research into advanced port and inland waterways applications.

Main tasks in 2012

- Contribute to the implementation of the GNSS APPAP, concentrating on priority markets;
- Assess the results of application development in terms of economic and social impact of the programmes;
- Receiver technology monitoring in interaction with receiver and chipset manufacturers;
- Analyse the EU share on global GNSS application market;
- Implement APPAP-related activities for Maritime.

Organisation of London 2012 Conference

7.6 Relocation of GSA headquarters to Prague and of GSMC OPS to Saint-Germain-en-Laye and Swanwick

The implementation of Decision 2010/803/EU of 10 December 2010 on the location of the seat of the European GNSS Agency shall be coordinated by the ICT and Logistics department and will remain the main task in the General Administration area in 2012.

There is an objective to relocate the GSA headquarters to Prague in the summer 2012 and start preparing the infrastructure for the GSMC sites in the second half of 2012 so that the GSMC can become operational in 2013. This timing will remove the risk of overlapping of these two tasks and will result in cost savings because there will be no need to establish short-term infrastructure links between the current premises in Brussels and the GSMC.

Joint taskforces created by the GSA and the respective Czech, French and UK authorities are expected to produce:

- Memorandum of understanding outlining the basic principles of the relocation and functioning of the GSA in the new sites
- Hosting agreements between the GSA and the GSA Hosting Entities (Czech Republic for GSA HQ, France and UK for GSMC);
- Binding roadmaps for the relocation of the GSA to Prague, Saint-Germain-en-Laye and Swanwick.

For the new headquarters in Prague, the above work should be completed before the end of 2011 and for the GSMC in the course of the year 2012.

The GSA will also need to launch some large procurement procedures identified in the roadmap in order to cover the operational needs of the Agency not included in the host agreements (typically the provision of material of any kind, IT equipment and support,

telecommunication services, energy, furniture, cleaning services, insurance etc.). Some of them may start already in 2011 but the majority of them will probably be launched in 2012. This may require additional temporary resources in the procurement area.

The preparation for the relocation will focus on the following areas:

- Legal – scope, structure and content of the host agreement, immunities granted to the GSA and staff etc.;
- Daily life and families – status, schooling, healthcare, social security, ID cards etc.;
- Logistics and ICT systems – preparation of the building and all equipment, computer networks, telephones, allocation of office space, meeting rooms, architecture, renovations, parking, archives and the relocation itself etc.;
- Security – includes physical security in the building, access control, security of ICT systems, protection of classified information, coordination with Czech security authorities, protection of the agency perimeter, counter-intelligence etc.

Due to the fact that the GSA IT infrastructure in Brussels will reach its end of life by the time of the relocations, a new IT infrastructure shall be built in these locations. This is, however, an excellent opportunity to make use of all the lessons learnt so far and generate further savings by changing the technological platforms and hosting facilities of some systems (namely GKMF, websites, EGNOS Portal). This will also include the implementation of some tools increasing the efficiency of work outside the office and make better use of the working time of the staff. The GSA will also seek to improve the capacity and functionality of the Documentation Management System (DMS) for classified information (for PRS and accreditation activities, basic version built in 2011).

7.7 General Administration, IT and Logistics

A substantial part of the GSA resources and efforts will continue to be invested in financial, legal and human resources tasks that underpin the core activities related to the security and commercialisation of the European satellite navigation services, the proper functioning of the GSA as an EU agency with legal personality and the work of the Administrative Board.

The procurement and contract management for the day-to-day business of the GSA as well as for the project related tasks will continue to be a very demanding challenge with the need for adequate resources matching the project necessities. A list of major procurement projects will be provided within the "work programme implementation plan 2012", to be presented together with the final Work Programme 2012. This implementation plan, including the updated status of projects, shall be regularly refined in 2012.

The GSA will continue to benefit from the savings generated by its new general IT Support contract introduced in 2011 and try to create grounds for further savings by exploiting the potential created by the relocation of the GSA HQ to Prague and the new data centre in the new HQ. The budgetary savings coming from the new general IT support contract will reach about 90.000 EUR in 2012 compared to 2010 and 2011. The GSA will also explore the possibility of investing around 50.000 EUR in the migration of GKMF to a new technological platform and change the hosting facility (DIGIT) as this would remove the costs currently spent on hosting and Livelink maintenance. That solution might result in 2013 in further savings in the order of about 100.000 EUR/year compared to 2011.

The following tasks were already included in the Work Programme 2011 but are expected to continue in the course of 2012:

- Support to the work of the SAB;

- Finalisation of the development, accreditation and start of exploitation of the DMS for Restreint UE information – to support PRS and Accreditation activities and to distribute the documentation to the Member States.

The ICT and Logistics team will continue to work on the improvements of the overall service to the GSA staff with the following goals:

- Delivery of a service aiming at providing staff with the most efficient tools to allow them to optimise their work;
- Provision of traceable and auditable projects using Prince 2 methodology;
- Accreditation of the new IT systems in Prague and GSMC for compliance with ISO 27001;
- Full implementation of Business Continuity;
- Improvements in the use of collaborative tools like SharePoint and Project management software in order to improve the internal collaboration and higher transparency of all GSA administrative processes.

Similarly to the relocation to Prague, the GSA will need to ensure that the two GSMC are fully operational from the IT and Logistics point of view. This task will include the need to procure and install office equipment, general services and supplies, communication lines, IT infrastructure and prepare part of the GSA staff for the relocation.

A very careful time planning and timely project implementation will be necessary in order to optimize the relocations and housekeeping of offices possibly in up to 4 locations (BE, CZ, UK, FR) at the same time.

Based on the roadmap created in 2011, the GSA foresees the need to launch a procedure for a 2013 budget adjustment once the exact content of the hosting agreements with the UK and France is finalized, or to modify the roadmap subject to the actual budgetary situation at the given moment of time.

Launch of all the procurement procedures identified in the roadmap can be expected realistically at the beginning of 2012. This may require additional temporary resources in the procurement area.

8 GSA LIST OF PLANNED ACTIONS

The following table provides a high-level summary of the specific actions which will allow the Work Programme to be fulfilled.

The FTE figures (listed per Main category) include all Temporary Agents (TAs) and Contract Agents (CAs) but exclude any external contractors. Additionally, note that these figures include people who are completely dedicated to the item in question, and does not include any additional support staff.

Financing source: GSA own budget, Title III

N	Main category	Estimated budget €	Action	Procedure	Est FTE
1	EGNOS Marketing	335,000	EGNOS marketing in aviation and in Road ITS	Framework contracts	2.0
2	Communication	100,000	Galileo Masters	Framework contracts and sponsorships	0.9
3		265,000	Events, website, promotional actions		
4	Security: Accreditation activities	200,000	Reimbursement to Member States of missions, meetings and trainings in relation to SAB, GSAP, FKC and CDA activities	Reimbursements based on real costs	7.5
5		1,170,000	Provision of support to the GSA in the Security accreditation activities (GSAP, FKC, CDA) related to the Galileo Programme	Framework contract	
TOTAL		2,070,000			

Financing source: New delegation agreement to be signed in 2012

N	Main category	Estimated budget €	Action	Procedure	Est FTE
6	Support to EC Application Action Plan	180,000	Support APPAP in maritime, high precision, mapping and third emerging markets	Existing framework contracts and launch of new open tender	1.8
7		655,000	Market analysis, including study on EU share in GNSS applications and creation of GNSS industry database; APPAP's KPI tracking and impact assessment for research projects		
		400,000	A conference and exhibition on Space Applications in London in October 2012, on behalf of the European Commission and in cooperation with the UK Space Agency.		
8	EGNOS & Galileo exploitation preparatory tasks	485,000	Exploitation market preparation incl. receivers technology monitoring, European Space Base, promotion and update of EGNOS portal, assisting the EC in SMEs support programme	Existing framework contracts and launch of new open tender	2.0
9		580,000	2014 IOC early services, contribution to the definition of Galileo CS, OS customer interface including ICD licence agreement management, PRS market study and entry plan		
10		1.500,000	Support to the development of the PRS user segment	New framework contract	5.4

N	Main category	Estimated budget €	Action	Procedure	Est FTE
11		1,400,000	New framework contract for external engineering and project management support	New framework contract	
12		500,000	Support to Eurocontrol marketing for user adoption on EGNOS and Galileo operational tasks.		0.4
TOTAL		5,700,000			

Financing source: Existing delegation agreements signed in 2011 and earlier

N	Main category	Estimated budget €	Action	Procedure	Est FTE
13	Security: PRS Delegation Agreement	11,000,000	PIONEER-2 project resulting in the procurement of a batch of 30 PRS Receivers (EP1)	New open tender resulting on multiple framework contracts or one single framework contract	7.5
14		600,000	GSMC OPS preparation	Framework contracts	
TOTAL		11,600,000			

N	Main category	Action	Procedure	EST FTE
15	Marketing Development: FP6 and FP7 Delegation Agreements	FP6 Calls: Last remaining FP6 grants to be liquidated in 2011	Grant agreements, reimbursements of accredited experts and framework contracts	3.2
		FP7 1 st Call: Last remaining grants to be closed and liquidated in 2011		
		FP7 2 nd Call: On-going grants under implementation		
		FP7 3 rd Call: New grant agreements to be signed in 2011 (estimated consumption in 2012 of 19,000,000 €)		

8.1 Budget relating to activities of the Security Accreditation Board

Article 11 of the GNSS Agency Regulation has established the Security Accreditation Board for European GNSS systems (hereinafter the 'Security Accreditation Board' or SAB) within the Agency. According to Article 11(10), the SAB shall have access to all the human and material resources required to provide appropriate administrative support functions and to enable it to perform its tasks independently.

According to Article 11(11), the SAB has set up special subordinate bodies, acting on its instructions, to deal with specific issues. The following subordinate bodies have been set-up:

- Galileo Security Accreditation Panel (GSAP), a panel to conduct security analysis reviews and tests to produce the relevant risk reports in order to assist it in preparing its decisions,
- A Crypto Distribution Authority (CDA) to assist the Security Accreditation Board in particular with regard to questions related to flight keys – flight key cell (FKC).

Article 13(2) of the GNSS Agency Regulation stipulates that the expenditure of the Agency shall cover staff, administrative and infrastructure expenditure, operating costs and expenditure associated with the functioning of the Security Accreditation Board, including the bodies referred to in Article 11(11), and the contracts and agreements concluded by the Agency in order to accomplish the tasks entrusted to it.

In terms of budget terminology in this document, "SAB related actions" include four types of specific activities: SAB costs - costs linked to the Security Accreditation Board activities, FKC, CDA and GSAP costs.

Following a Decision taken by the Executive Director in July 2011, budget line 3300 *SAB Expenditure* has been created to appropriately reflect SAB costs on Title III and to allow adequate tracking and separation of SAB related actions. Operational expenditure will cover all SAB external expenditure, such as experts, Member States support, external contractors, reimbursement of meeting costs and so on.

It must be noted that on Title I and Title II, SAB-related expenditure has been identified on the basis of human resources working on SAB activities applying a full time equivalent (FTE).

Draft Budget 2012-Budget relating to activities of the Security Accreditation Board

Budget line	Heading	GSA DB 2012	SAB DB 2012
	EXPENDITURE		
	Title 1 - Staff		
1100	Staff expenditure	5,000,000	803,000
1200	Recruitment costs	70,000	11,579
1300	Missions and travel	450,000	162,000
1400	Training expenditure	100,000	16,541
1700	Receptions and events	10,000	1,654
1800	Move cost to Prague	100,000	16,541
	Total for title 1	5,730,000	994,774
	Title 2 - Administrative expenditure		
2000	Rental of buildings	650,000	107,516
2100	Data processing	1,200,000	198,492
2200	Movable property	160,000	26,466
2300	Current administrative costs	130,000	21,503
2400	Postage and telecommunication costs	30,000	4,962
2500	Expenditure on meetings	200,000	130,000
2700	Move cost to Prague	400,000	66,164
2800	Information and publishing	30,000	4,962
	Total for title 2	2,800,000	560,066
	Total for titles 1 and 2	8,530,000	1,554,839
	Title 3 - Operational expenditure		
3100	Expenditure on studies	700,000	0
3200	Publication and translation costs	0	0
3300	SAB expenditure	1,370,000	1,370,000
	Total for title 3	2,070,000	1,370,000
	TOTAL T1+T2+T3	10,600,000	2,924,839⁴⁷

⁴⁷ This amount is related to the Security Accreditation Board and is included in the € 10,6M of the GSA Budget 2012. It must be equally noted that the initial request from the Board amounted to € 3, 054M

9 LIST OF ANNEXES

Annex 1: Commission guidelines to the GSA (C(2009) 1153 final) (under revision)